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low brick annex. The large north room (90 x 28 ft.) on the first floor of the main institute building (the Rogers Building), with its admirable light and its many facilities, will be devoted to the purposes of the natural-history course, and will be fitted up with appropriate apparatus and instruments. Within a short time, it is also anticipated that a room in the basement (being one of those now occupied by the chemical or by the metallurgical department) will be available for use in dissections and in the coarser work of a biological laboratory.

Dr. W. T. Sedgwick, a graduate of the Sheffield scientific school, and recently connected with the biological department of the Johns Hopkins university, having been appointed assistant professor of biology, will assume charge of the biological laboratory at the opening of the next school year, and will give the instruction in physiology, botany, and general biology, now provided for in the regular courses of the institute, especially in the so-called natural-history course, as well as take charge of the work of special students in these branches.

The instruction given in geology by Professor Niles, and in zoölogy and paleontology by Professor Hyatt, will be continued. Mr. W. O. Crosby has been appointed assistant professor of mineralogy and lithology, and will hereafter give, throughout the school year, the instruction which has heretofore been confined to a single term. The advantages of the extension of the chemical and physical laboratories, abundantly provided for in the new building of the institute, will be enjoyed by the students of the natural-history course, in common with those of the other regular courses.

In view of the foregoing enlargement of facilities and opportunities for study and research in the branches especially embraced in this course, it is recommended to students looking forward either to becoming naturalists, or to the subsequent study and practice of medicine.

#### NOTES AND NEWS.

The comet recently detected by W. R. Brooks at Phelps, N.Y., has become an object of unusual interest since its identification with the comet of 1812, the return of which has been anticipated about this time. Mr. Brooks first noticed the comet as a suspicious object on the night of Sept. 1, and directed the attention of astronomers to it, after a second observation. During the first half of September it was repeatedly observed at various places; but its great distance and consequently slow movement made it difficult to obtain trustworthy approximations to its orbit, and thus delayed the recognition of its character. Its identity with the comet of 1812 was first announced, so far as we are informed at present, by the Rev. George M. Searle of New York, in a letter published on Sept. 18. A communication from him to Harvard college observatory, with which he was formerly connected, was received there on the morning of Sept. 20, and contained a statement of the process by which he reached the interesting

conclusion previously announced. This consisted in determining, from the positions of the Brooks comet, the corresponding points of intersection with Encke's orbit of 1812; the result for the time of perihelion passage being 1884, Jan., 25.17, and the longitude of the perihelion being closely accordant with that given by Encke.

Professor Boss of the Dudley observatory, as will be seen, on an earlier page, arrived independently at the same conclusion by computing parabolic elements from observations of Sept. 5, 9, and 18, which exhibited a close similarity with those of the orbit of 1812. The circular which he has issued upon the subject states that he communicated his result to the associated press on the evening of Sept. 19.

The communication of Father Searle to Harvard college observatory, already mentioned, induced Mr. Chandler to examine the question, with the aid of the most recent observations. The result was to furnish further confirmation of the asserted identity; and the positions obtained at the observatory as late as Sept. 22 make it still more evident. The difference between the observed place and that resulting from the orbit of 1812, as corrected by the recent publication of Schulhof and Bossert, but with the time of perihelion passage assumed as 1884, Jan., 25.780, is as follows:—

Diff. R.A. — 0<sup>s</sup>.1. (O—C.)

“ Decl. + 66’.

This agreement is entirely within the uncertainty of the orbit of 1812, from the old observations.

The comet has also exhibited phenomena of great interest in regard to the development of its structure by its approach to the sun. When first observed this year, it was a very faint and small nebulous object, but the appearance of a stellar nucleus was noted at Harvard college observatory by Mr. Wendell on Sept. 3. The nucleus was afterwards less distinct. This may have been due to unfavorable conditions of observation, or it may possibly indicate a preliminary series of changes like those which the comet has just exhibited. On Sept. 21, as seen at Harvard college observatory, the comet was still very faint. A slight condensation at one place could be seen with the large equatorial, but this could hardly be called stellar. The next night, Sept. 22, the appearance of the comet had so completely changed that it was difficult to believe it the same object previously seen. It now resembled a star nearly as bright as one of the eighth magnitude. Very little nebulosity could be detected about it, but some was seen early in the evening, while the comet was sufficiently high in the sky. During the evening it appeared to be gaining perceptibly in brightness. The next night, Sept. 23, it was seen at times between clouds, and was found to have again changed its appearance. It was now even brighter than before (although still slightly inferior to a star of the eighth magnitude), but it had lost its stellar appearance, and had become blurred, regaining the ordinary character of a cometic nucleus. Traces of the development of a tail were also perceptible. The rapidity of this series of changes is very unusual, if not unexampled.

The comet will doubtless become visible to the naked eye, and will prove an interesting object, although it cannot at present be confidently expected to rival the fine comets of recent years in apparent dimensions and brilliancy.

— Nordenskiöld has returned from his exploration of the interior of Greenland, without fully effecting his purpose. From the contradictory reports that have been published by the daily press, we gather that he entered the interior from Auleitsvik Bay, near Disco Island, and himself penetrated to the distance of nearly ninety miles, when the snow became too soft for sledges. His Laplanders pushed much farther on snow-shoes, or about half way across the continent, if they took a direct easterly course, of which we are not assured. On the east coast his vessel subsequently pushed as far northward as Cape Dan, but was prevented from making its way farther northward by the ice.

— The first of the authoritative publications of the International fisheries exhibition contains an excellent account, by G. Brown Goode, of the fishery industries of the United States, both historical and statistical, including all the marine products that are derived from the animal and vegetable life of the seas, as well as a careful though condensed account of the labors of the federal fish commission.

— Professor Simon Newcomb, U. S. Navy, superintendent of the *American ephemeris* and *Nautical almanac*, Washington, and Dr. Benjamin Apthorp Gould, director of the National observatory at Cordoba, Argentine Republic, have been elected corresponding members of the Berlin *Akademie der Wissenschaften*.

— According to *Nature*, the balloon of the Paris observatory has been in working order for some weeks. Its capacity being only sixty cubic metres, it was found difficult to use it, except in calm weather. The motions of the registering apparatus are an obstacle to correct readings. The experiments, conducted by Admiral Mouchez, are stated to be only preliminary to further aerostatical experiments. The subject is quite new, scientific ballooning being only in its infancy; and it is only by gradual investigation that the extent of the services it can render to science can be ascertained.

— Professor P. Denza discusses in the *Comptes rendus* the question of the connection between eclipses and terrestrial magnetism. From the time of the total solar eclipse of Dec. 22, 1870, regular observations of magnetic declination have been made at the observatory of Moncalieri during the progress of all eclipses of the sun, as well as some eclipses of the moon. The needle has been observed at intervals of only a few minutes on such occasions; and the entire series of observations extends through twenty eclipses, the last being the Egyptian solar eclipse of May 17, 1882. His discussion indicates no connection between the amount of magnetic disturbance and the magnitude of solar eclipses; and in general it may be regarded as established from his investigation, that the passage of the moon between the earth and the sun in eclipses of the latter, and the passage of the

moon through the shadow of the earth in eclipses of the former, have no influence whatever upon terrestrial magnetism.

— The *Illustrirte zeitung* reports that the fossil remains of several iguanodons have been found at Bernipart, in Belgium. The skeleton of one of these fossil monsters has been carefully put together, and removed to the Natural history museum at Brussels, where a special case has been made for it, and placed in the courtyard, no convenient space being found inside. The same journal reports the discovery of the remains of animals of the bronze age, made during the extension of the fortifications of Spandau. Among other things were the bones of a species of dog, the leg-bone of a gigantic horse, and the bones of a small species of pig, somewhat like the present Indian one. The remains have been examined by Professor Nehring, who also discovered the remains of a small-limbed goat and of a sheep.

— Mr. Winslow Upton, of the U. S. signal office at Washington, has been elected professor of astronomy at Brown university, Providence, R.I. It is understood that his acceptance of the position is conditional upon the erection of an astronomical observatory which the college authorities have under consideration.

— Professor Piazzi Smyth has published his views upon the subject of a prime meridian for the whole world. They furnish an excellent illustration of the fact that a man's peculiar opinions on any one subject may warp his judgment upon matters wholly removed from it. He advocates the adoption of the meridian of the Great pyramid, because it "passes over solid, habitable, and for ages inhabited, land through nearly the whole of its course from north to south. Its line is capable, therefore, of being laid out along almost all that distance by trigonometrical measurement, and marked by masonried station-signals." Among other equally cogent arguments are the statements that the pyramid "dates from before all human written history, all known architecture, all living architecture;" that "its meridian divides the lands and numbers of the people of the earth much more nearly than any other;" and that it passes not very far from Jerusalem, near which the prime meridian of the world ought to be located by Christian people.

The last idea is developed more fully by M. du Caillaud, who has addressed a letter to the president of the Paris geographical society, urging the adoption of the meridian of Bethlehem, thus harmonizing the longitude reckoning with the customary method of numbering the years from the birth of Christ.

— At Wabash college, Crawfordsville, Ind., a new laboratory is in process of erection, which is to be devoted entirely to biological work. One room, 50×100 feet, with balcony and side-aisles, will contain the general collection of many thousand specimens; a second room will contain the herbarium of twenty thousand species; and a third will be devoted to other collections. Special students are directed to the fact that the collection of crinoids from the Keokuk

beds in the vicinity is complete, and that botanical material is on hand in great abundance for consultation. There will be three laboratories provided with every needed appliance,—one for general botanical work, the second for zoölogical work, the third for special work with compound microscopes. The last laboratory, in particular, is to be devoted exclusively to original research.

—Frederick A. Fernald, in criticising, in the September *Century*, Mr. A. Melville Bell's paper in *SCIENCE* for June 1, objects to the forms of the visible-speech letters which Mr. Bell would employ as symbols for the six consonant sounds in our language which have no proper letters to represent them, and suggests the discarding from their present use in our alphabet of the duplicated symbols *g*, *x*, and *c*, and using them instead for the sounds represented by *ng*, *zh*, and *ch*. "Perhaps it will be decided to replace *w* and *y* by vowels, as in Franklin's scheme; if so, these, with one Anglo-Saxon letter, already looked upon with favor, would make up the six lacking consonants." To this suggestion it may be objected, that the use of familiar letters in an unfamiliar sense would be a source of constant confusion. For example, we should have to read cat and coke as *chat* and *choke*, pleasure as *pleasure*, roux as *rouge*, sig as *sing*, etc. The alterations of spelling, too, would be seriously numerous; as in *siks* for *six*, *egzist* for *exist*, *kueen* for *queen*, *kuite* for *quite*, etc. The use of the Anglo-Saxon *þ* and *ð* for the two sounds of *th* would certainly be an improvement on present practice; but the writing of *w* (in *way*) and *y* (in *yea*) as vowels would be altogether wrong, as these sounds are demonstrably not vowels, but consonants. *Wh*, also, is a true consonant,—the non-vocal correspondent of *w*,—and has not, as alleged, the sound of *hoo*. If *wh* had this sound, the sentence, "I saw the man whet the knife," would not be—as it is—unmistakably distinct from "I saw the man who ate the knife." *Ch* (in *chair*) is not, as alleged, a simple consonant, but a compound consisting of a shut position of the tongue (*t*), followed by a hiss (*sh*); and either the silent position or the hiss may be prolonged *ad libitum*.

"Even *such* a man, so woe-begone," etc.

Give due lingering emphasis to the word 'such,' in the above quotation, and the compound character of the *ch*—misunderstood by many writers—will be apparent. The letter *c* should consistently stand for *sh*, not *ch*, in Mr. Fernald's proposition; but, if a better method of completing our alphabet cannot be adopted, by all means rather let the A B C remain as it is.

—*Le Temps* has published the following directions by Pasteur to those exposed to the contagion of cholera.

The precautions to be taken, indicated to the members of the French cholera commission, all relate to the case when it is necessary to guard against the excessive causes of contagion.

1°. Do not use the potable water of the locality, when the commission enters on its investigations,

without having first boiled the water, and, after it has cooled, shaken it for some minutes (two or three minutes are sufficient) in a bottle half full and corked.

One may use the waters of the locality, provided one draws them at a spring, in vessels which have been purified by exposing them to a temperature of 150° C., or, better, to a higher heat. One can advantageously employ natural mineral waters.

2°. Use wine which has been heated in bottles some 50° to 60°, and drink from glasses likewise purified.

3°. Only make use of food thoroughly boiled, or of fruits well washed with water which has been boiled, and which has been kept in the same vessels in which it was boiled, or which has been transferred from these vessels to others disinfected by heat.

4°. The bread used should be cut in thin slices, and kept at a temperature of 150° C. for twenty minutes or more.

5°. All vessels used for food should be exposed to a temperature of 150° C. or more.

6°. Bed linen and towels should be plunged in boiling water, and dried.

7°. Water for washing should be boiled, and have added to it, after cooling, one five-hundredth part of thymic acid (one litre of dilute alcohol for two grams of acid) and one-fiftieth part of phenic acid (one litre of water for twenty grams of acid).

8°. Wash the hands and body often during the day with the boiled water to which the thymic or phenic acid has been added.

9°. It is only in case one has to handle the bodies of those who have died from cholera, or the clothes and linen soiled with their discharges, that it is necessary to cover the mouth and nostrils with a mask, formed of two pieces of fine wire gauze, with wadding between, one centimetre thick. The mask should be exposed to a temperature of 150° each time before it is used.

—The Wisconsin agricultural experiment-station was organized by the board of regents of the University of Wisconsin, in June, 1883. The work of the station is in charge of W. A. Henry, agriculture; William Trelease, botany and horticulture; H. P. Armsby, agricultural chemistry. The bulletins of the station will be sent to all interested. The first number contains an account of experiments at the station in feeding skim-milk to calves and pigs.

—Mr. C. F. Mabery has resigned his position at Harvard college, and accepted the chair of chemistry at the recently organized Case school of applied science at Cleveland, O.

—The British association for the advancement of science will meet next year in Montreal, on Aug. 27.

—Next year's meeting of the Swiss naturalists will be held at Lucerne.

—The jury which will examine the electric lighting machinery offered for competition at the Cincinnati industrial exposition has begun its work. It is hoped that the comparative tests will be the most satisfactory yet obtained. Awards of five hundred and three hundred dollars will be made for the best

and second best systems of electric lighting, both incandescent and arc.

—We learn from *Symons' meteorological magazine* for August, that the government has granted Professor Lemström a sum of 37,000 marks for the continuation of his auroral experiments in Finnish Lapland. These investigations will include the electrical current which produces the aurora, terrestrial currents, and magnetic perturbations.

—Professor Henry F. Osborn of Princeton has published in the July number of the *Quarterly journal of microscopical science*, in a more extended form and with the accompaniment of a lithographic plate, the results of his researches on the foetal envelopes of marsupials. The interest and importance of these investigations are already known, at least to the embryologists among our readers, for Professor Osborn's conclusions were first published in *SCIENCE*.

—The thirty-eighth volume of the *Mémoires du dépôt de la guerre*, recently printed by the Russian general staff under the editorship of Rylke, and of which only one hundred and fifty copies are issued, contains, among other things, an account of the astronomical and trigonometrical work in eastern Siberia, by Bolsheff, Polianoffski, and Kramereff; a memoir of Kulberg on the Russian geodetic operations in Armenia; a report by Lebedeff on triangulation, topographic and astronomical work in Bulgaria; a list of astronomical stations in the Khirgiz steppes by Bondorf; and Stebnitzki's report on the results of his experiments with a reversible pendulum. Of this important work, absolutely necessary for those seriously interested in the study of the geography of Russia and adjacent countries, there is probably not a copy in America.

—Mr. Miles Rock, assistant astronomer at the U. S. naval observatory, has accepted the appointment of chief astronomer and engineer commissioner on the international boundary commission of Guatemala, to locate the boundary between that country and Mexico. He will sail from New York Oct. 1, and expects to be absent about a year.

—Professor H. M. Paul, late of the Imperial university of Tokio, has returned to this country, and accepted a position in Washington under the Transit of Venus commission.

—The *Comptes rendus* of Aug. 13 gives some extracts from a letter of M. A. Richard to M. de Lesseps, on the cultivation of date-palms. M. Richard states that these palms grow best on a soil saturated with salt, as has been proved at Alicante and elsewhere. The land around Elche, in Valencia, is irrigated from the Vinalopo, which is extremely salt, rising, as it does, in Mount Pinoso, the rocks of which contain much salt and sulphate of lime. This water, having been used for centuries for watering the palm-plantations, has at last formed a crust, which has to be broken with a pick-axe to admit the water below. The town of Alicante has planted its beautiful boulevard along the shore with date-palms, and, as fresh water is very precious there, the trees are regularly watered with sea-water. All the plantations recently made along the shore from Huertas to Rio Monegro

have their roots literally in the sea-water, being planted at but a few feet from the sea.

# RECENT BOOKS AND PAMPHLETS.

Baillon, H. Traité de botanique médicale phanérogamique fasc. i. Paris, *Hachette*. (To be completed in two fascicules.) 2,301 fig. 8°.

Belfield, W. T. On the relations of micro-organisms to disease. Chicago, 1883. 12°.

Bergstedt, N. H. Bornholms flora. del i. Phanerogamae. Nexoe, 1883. 8°.

Berlin. Königliche museum. Amerika's nord-west-küste: neueste ergebnisse ethnologischen reise. (Ed. by Bastian.) Berlin, *Asher*, 1883. 4+13(+13) p., 13 pl. 1°.

Bert, P. Histoire naturelle. Anatomie et physiologie animales. Paris, *Masson*, 1883. 8+382 p., 270 fig. 18°.

Black, William George. Folk-medicine; a chapter in the history of culture. London, *Stock*, 1883. (Publ. Folk-lore soc. 12.) (10)+228 p. 8°.

Borzi, A. Studi algologici. Saggio di ricerche sulla biologia delle alghe. fasc. i. Chlorophyceae. Messina, 1883. 119 p., illustr. 4°.

Buffalo microscopical club. Eighth annual meeting. Secretary's annual report; president's annual address; list of officers and members. Buffalo, *Baker, Jones, & Co., pr.*, 1883. 2+17 p. 8°.

Chabaud, N. Des accidents observés dans les appareils à air comprimé employés aux travaux sous-marins et particulièrement de ceux dus à une décompression trop brusque. Paris, *impr., Davy*, 1883. 55 p. 8°.

Chalon, J. Résumé de cosmographie. Verviers, *impr. Gilon*, 1883. 128 p., illustr. 12°.

Cocconi, G. Flora della provincia di Bologna. Bologna, 1883. 602 p. 16°.

Coleopterorum novitates, recueil spécialement consacré à l'étude des coléoptères. tome I, livr. 1. Rennes, *impr. Oberthur*, 1883. 32 p. 8°.

Créé, L. Nouveaux éléments de botanique, contenant l'organographie, l'anatomie, la morphologie, la physiologie, la botanique rurale et des notions de géographie botanique et de botanique fossile. Paris, 1883. 1160 p., 1,332 fig. 12°.

Dejeron, R. Les vignes et les vins de l'Algérie. tome i. Toulouse, 1883. 319 p. 8°.

Derosne, C. La photographie pour tous, traité élémentaire des nouveaux procédés. Paris, *Gauthiers-Villars*, 1883. 106 p. 8°.

Devos, A. De quelques moyens pratiques pour reconnaître les plantes pendant les herborisations. Dinant, *Delplace-Lemoine*, 1883. 38 p. 8°.

D'Ovidio, C. Le proprietà fondamentali delle superficie di 2. ordine, studiate sulla equazione generale di 2. grado, in coordinate cartesiane. Torino, 1883. 182 p. 8°.

Du Bois, A. J. The strains in framed structures. New York, 1883. illustr. 4°.

Duincke, O. Beiträge zur kenntniss des bernsteinöls. Inaug. diss. Königsberg, *Gräfe & Unzer*, 1883. 31 p. 8°.

Edinburgh, Duke of. Notes on the sea-fisheries and fishing population of the United Kingdom, arising from information gained during three years' command of the naval reserves. London, 1883. 64 p. 8°.

Engel, T. Geognostischer wegweiser durch Württemberg. Anleitung zum erkennen der schichten und zum sammeln der petrefakten. Stuttgart, 1883. 16+326 p., illustr. 8°.

Flügge, C. Fermente und mikroparasiten. Leipzig, 1883. 308 p., 65 fig. 8°.

Flynn, P. J. Hydraulic tables for the calculation of the discharge through sewers, pipes, and conduits; based on Kutter's formula. New York, *Van Nostrand*, 1883. (Van Nostrand's sc. ser. 67.) 135 p. 32°.

Forsyth, A. R. Memoir on the theta-functions, particularly those of two variables. London, 1883. 80 p. 4°.

Forwerg, M. Fruchtformen. Systematische und verglei, chende darstellung in natürlichen grössen. Dresden, 1883. f°.

Gegenbaur, C. Lehrbuch der anatomie des menschen. Leipzig, 1883. 558 fig. 8°.

Goode, G. Brown. The fishery industries of the United States. (Great intern. fish. exhib. — Papers of the conferences.) London, *Clowes*, 1883. 84 p., 2 tab. 8°.

Gottsche, C. Die sedimentär-geschichte des provinz Schleswig-Holstein. Als manuskript gedruckt. Yokohama, *Dr. Lévy u. Salabelle*, 1883. 6+66 p., 2 maps. 8°.

Gradle, H. Bacteria and the germ-theory of disease: eight lectures at the Chicago medical college. Chicago, *Keener*, 1883. 4+219 p. 8°.